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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,518	10/02/2003	Huai-Rong Shao		8242

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EXAMINER	
HO, CHUONG T	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/677,518	**Applicant(s)** SHAO ET AL.	
	Examiner CHUONG T. HO	**Art Unit** 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 07/20/07 have been entered and made of record.

2. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

3. Claim 1-11 are presented for examination.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Young (U.S.Patent No. 6,810,022 B1) in view of Hitt (Pub. No.: 2004/0090345 A1).

In the claim 1, Young (6,810,022 B1) discloses partitioning, in each node, the frame into a plurality of time slots (col. 3, lines 8-10, the time allocated to the representative frame is shown divided into "M" distinct time slots 306. It will be appreciated that different numbers of time slots can be used in the various embodiments of the invention...One of the N broadcast slots 308 is assigned to each node, each node will transmit its control packet once during each cycle 302); Marking, in each node, a particular time slot as occupied (not available) if the channel has a carrier signal during the time slot and otherwise marking the time slot as available (col. 4, lines 6-8, to allocate a communication slot for full-duplex communication, a node first generates the set of slots that are not available because they are already in use locally, the subscript "i" denode information about the node performing the allocation and "j" denotes the corresponding information reported by a neighboring node) (col. 4, lines 58-60, to decide which slots and channel are available for full-duplex broadcast allocations, a node I constructs the blocked allocations for transmitting to all of its neighbors by excluding allocations);

Transmitting, in each node, a packet only if the time slot is marked available using a distributed frame structure (col. 5, lines 8-10, the slots not contained in Blocked (I, s, f) are available for use by node I to transmit to neighbors. When node I allocated one the available slot for such purpose, it can receive therein a transmission from any of its neighbor nodes j, without creating conflicts for any other potentials receiver in its neighborhood).

However. Young is silent to disclosing monitoring, in each node, the channel for a period of time equal to at least a length of a frame.

Hitt discloses monitoring, in each node, the channel for a period of time equal to at least a length of a frame ([0076], The sensor nodes send message packets at scheduled times and the receiver node responds to transmissions with an acknowledge packet. The acknowledge packet contains the timing information for the sensor nodes' next scheduled packet transmission and the next frequency of transmission (if frequency hopping is used). If the receiver node wants to communicate to the sensor node, the receiver node sends data/command packets to the sensor nodes after receiving packets from the sensor nodes, but before sending the acknowledge packet that terminates the time slot. The benefit of this protocol is that the sensor nodes and receiver nodes can sleep until the next scheduled transmission slot, saving a tremendous amount of power) ([0077], instead of having the receiver nodes schedule the transmission slots, the sender nodes can also function to provide scheduling of the next transmission. In the present description, the sender nodes are those wireless nodes that are transmitting messages. In this case, the sender nodes send as a message the timing information for the receiver nodes' next scheduled packet transmission. After the receiver nodes receive and acknowledge the message containing the timing information, the sender node and the receiver nodes power down until the next scheduled time slot. Furthermore, the sender node and the receiver node can also negotiate the next scheduled time slot. In one embodiment, either the sender node or the receiver node publishes to the other node its available timeslots. The node receiving the available timeslots information processes the information and compares the information with its own available timeslot)

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a plurality of nodes connected to each by a single shared wireless communication channel taught by Hitt into the Young. One would have been motivated to do so to avoid interference with other nodes and to adjust for significant changes in load. Moreover, it would be desirable to locally coordinate such channel space use and provide dynamic allocation of channel space .

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system (Young – Hitt) in view of (An Energy-Efficient MAC Protocol for Wireless Sensor Networks, Wei Ye, John Heidemann, Deborah Estrin).

As to the claim 2, the combined system (Young – Hitt) discloses the limitations of claim 1 above.

However, the combined system (Young – Hitt) are silent to disclosing the nodes are sensor nodes.

(An Energy-Efficient MAC Protocol for Wireless Sensor Networks, Wei Ye, John Heidemann, Deborah Estrin) discloses the nodes are sensor nodes (page 1567, each node has one or more sensors, embedded processors and low-power radios, and is normally battery operated. Typically, theses node coordinate to perform a common task).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the nodes are sensor nodes taught by (An Energy-Efficient MAC Protocol for Wireless Sensor Networks, Wei Ye, John Heidemann, Deborah

Estrin) into the combined system (Young – Hitt). One would have been motivated to do so to enable the successful operation of the network.

3. As to the claim 3, (An Energy-Efficient MAC Protocol for Wireless Sensor Networks, Wei Ye, John Heidemann, Deborah Estrin) discloses the network is ad-hoc (see abstract, ad-hoc).

4. As to the claim 4, Hitt discloses the packet is transmitted periodically by the node during the available time slot ([0077]).

5. As to claim 5, Hitt discloses the packet is transmitted in response to an event sensed by the sensor node ([0077]).

6. As to claim 6, Hitt disclose in which the time slots of the frames of the nodes are time synchronized ([0077], synchronization).

7. As to claim 7, Hitt disclose the channel is monitored and the marking of the time slots are updated periodically ([0076] [0077]).

8. As to claim 8, Hitt discloses the monitoring is passive (page 7, [0076] [0077]).

9. As to claim 9, Young discloses the marking only requires information acquired by monitoring the channel (col. 4, lines 6-8, to allocate a communication slot for full-duplex communication, a node first generates the set of slots that are not available because they are already in use locally, the subscript "i" denode information about the node performing the allocation and "j" denotes the corresponding information reported by a neighboring node) (col. 4, lines 58-60, to decide which slots and channel are available for full-duplex broadcast allocations, a node I constructs the blocked allocations for transmitting to all of its neighbors by excluding allocations).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system (Young – Hitt) in view of Welles, II et al. (5,691,980)

As to claim 10, the combined system (Young – Hitt) discloses the limitations of claim 1 above.

However, the combined system (Young – Hitt) are silent to disclosing different nodes transmit packets at different rates.

Welles, II et al. disclose different nodes transmit packets at different rates (If the slave unit receives a correct interrogation message from the master unit, then the slave unit uses the time of the start of the received message to resynchronize its clock based on the master clock for the next scheduled "ARE YOU STILL PRESENT?" message. This procedure ensures that even if the local clocks of the master and slave units at slightly different rates, the slave will always have its receiver turned on when the master transmits an interrogation to it. This further ensures that the slave unit will be turned off for as much of the time as is possible, thereby conserving power).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate different nodes transmit packets at different rates taught by Welles into the combined system (Young – Hitt). One would have been motivated to do so to allow a units with inoperative GPS receivers or communication transmitters to continue to provide location and tracking information through the LAN.

12. As to claim 11, Welles, II et al. disclose the monitoring reveals identities (ID) of the plurality of nodes in the network (see abstract, ID "identities).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hitt (Pub. No.: 2004/0090329 A1);

Clare et al. (US 6,414,955 B1) ; Brommer (Pub. No.: 2006/0114826 A1).

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHUONG T. HO whose telephone number is (571) 272-3133. The examiner can normally be reached on 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ORGAD EDAN can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

09/25/07

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Edan Orgad 9/27/07